UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

MAY 30 1991

MEMORANDUM

SUBJECT: GI Absorption Factor for Plutonium-239/240 Oxide

FROM: Robert S. Dyer, Chief
Environmental Studies and
Statistics Branch, ASD/ORP (ANR-461)

TO: Pei-Fung Hurst, PhD
Coordinator
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Chemical Mixtures Assessment Branch (ECAO-Cin)

In response to your request of 21 May 1991, we have discussed with our Bioeffects Analysis Branch (BAB) the question of an appropriate gastrointestinal (GI) absorption factor (or f_1 value) for Pu-239/240 oxide for general public exposures. As a result of these discussions, we reconfirm the correctness of the value of 1.0E-4 listed for oxides of Pu-239, Pu-240 and Pu-242 in Table C of the Health Effects Assessment Summary Tables (Annual FY 91) and recommend its use.

A key reason why we rejected the GI absorption factor of 1.0E-5 for public exposures proposed by the PRP contractor is that the International Commission on Radiological Protection (ICRP 1986[1]) recommends a value of 1.0E-3 for all compounds of plutonium for population exposures via food chains. However, given that (1) the physicochemical form of plutonium can vary widely with variable environmental conditions, (2) ICRP also recommends the use of different f_1 values when justifiable for specific situations, and (3) plutonium released initially from Rocky Flats may be in the insoluble oxide form, we have concluded that an absorption value of 1.0E-4 would provide an adequate margin of safety for potential health risks to the general public.

For occupational exposures to oxides of plutonium, we agree with ICRP's recommendation of an f_1 value of 1.0E-5, but only when exposure conditions can be characterized adequately.

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[1] ICRP 1986. The Metabolism of Plutonium and Related Elements: A Report of a Task Group of Committee 2 of the International Commission on Radiological Protection, ICRP Publication 48. Pergamon Press (Oxford), April 1986.

If you have any further questions or comments concerning this issue, please contact me or Dr. Anthony Wolbarst of my staff at FTS 475-9630, or Dr. Jerome Puskin at FTS 475-9640.

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